C-A OPERATIONS PROCEDURE MANUAL

8.13 C-A Procedure for Shielding / Barrier Removal, Removal of Primary Area Beam Line Components, or Modifications

Text pages 2 through 5

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved:_____**Signature On File**_____ _____
Collider-Accelerator Department Chairman Date

A. Pendzick, P. Cirnigliaro

8.13 C-A Procedure for Shielding, Barrier Removal, Removal of Primary Area Beam Line Components, or Modifications

1. Purpose

1.1 To provide instructions for Liaison Engineers for the movement of activated beam line components out of the primary areas.

1.2 Definitions:

1.2.1 **Shielding**: A bulk material used to attenuate radiation. Temporary Shielding is shielding that is not a permanent part of the Facility.

Examples:

- Permanent Shielding may include concrete blocks which are used in the construction of a beam cave or beam stop.
- Permanent Shielding may include lead, steel, and pack block which are used in the construction of a beam cave or beam stop.
- Temporary Shielding may include, paraffin, borax, lead bags, and sandbags which are used in the construction of a beam cave or beam stop.

1.2.2 **Radiation Barrier**: Any material or device that prevents access to a radiation field.

Examples:

- Access gates to a beam cave.
- Fenced areas which delineate a beam line and has a gate that is part of the C-A Radiation Interlock System or padlock-controlled by Health Physics.
- Fenced areas with gates that are padlock-controlled by the Access Procedure for Secured Catwalks and Shielding Roofs During Proton Running.
- A beam line transport vacuum pipe.
- A beam line trajectory "Sonatube" barrier.
- Mesh netting or other material which surround a beam line trajectory.

- Any component in the beam line which, when removed, would allow access to the beam line trajectory. (Magnets, counters, instrumentation, etc.).

1.2.3 Activated beam line components.

Examples

- Magnets, cables, cable tray, piping, in primary areas.
- Collimators and targets in primary areas.
- Instrumentation in primary areas.

2. Responsibilities

The beam line Liaison Engineer and Liaison Physicist are responsible for implementing this procedure whenever a shield or barrier is removed and whenever an activated beam line component is removed from a primary cave.

3. Prerequisites

3.1 Consult with the beam line Liaison Physicist and determine what beam conditions are required to safely remove or modify the shielding barrier.

3.2 When these requirements will affect more than one experimental beam line, the Liaison Physicist will provide a set of conditions. (Hold tags, fault studies, notifications, etc.)

3.3 The Liaison Engineer shall clearly indicate on a work order what beam conditions are required.

3.4 The Liaison Engineer must be present on jobs requiring shielding removal close to running beam lines and will ascertain that proper shielding is being removed.

3.5 Trained and qualified Liaison Engineer and Liaison Physicist.

4. Precautions

4.1 If the removal affects more than one experimental beam line, or the removal is in proximity of another running beam line, or the intended work results in an

unintended modification, the liaison engineer must ensure that the affected area is not left unattended until the shielding or barrier is replaced or a temporary barrier is installed signaled by a Health Physics tape or ribbon and signs.

4.2 If a beam line component is removed from a primary area, it must be surveyed by HP and placed in an appropriate area. The component must be monitored and labeled.

5. Procedure

5.1 The Liaison Engineer, or designee, shall insure that the CAS Watch Coordinator, Operations Coordinator, and the experiment(s) are notified.

5.2 The Liaison Engineer, or designee, shall carry out the safe beam requirements set forth by the Liaison Physicist.

5.3 The Liaison Engineer, or designee, shall notify the person responsible for accomplishing the barrier or shielding removal/modification that a safe beam condition exists and work may begin.

5.4 All materials removed from primary areas must comply with C-A policy for radioactive material control, especially requirements given C-A-OPM 8.13.2, C-A Procedure for Radioactive Material Control.

5.5 Storage of materials removed from primary areas can be affected by contacting a C-A Storage Area Custodian. See Attachment 8.1.

5.6 Upon completion of the work order, the Liaison Engineer, or designee, shall notify the on-duty OC and remove any restrictions that may have been a requirement to make for a safe beam condition.

5.7 The Liaison Engineer, or designee, shall insure that the CAS Watch Coordinator, Operations Coordinator, and the experimenter(s) are notified that the work is completed.

6. Documentation

6.1 Sign off the completed work order.

6.2 Make appropriate entries in the MCR and ECR logbooks.

7. References

7.1 C-A-OPM 8.13.2, "C-A Procedure for Radioactive Material Control"
7.2 C-A-OPM-ATT 8.13.2.a, "Posting Requirements For Radioactive Materials Work Areas"
7.3 C-A-OPM-ATT 8.13.2.b, " Activated Materials Rules (1)"
7.4 C-A-OPM-ATT 8.13.2.c, " Activated Materials Rules (2)"

8. Attachments

8.1 C-A-OPM-ATT 8.13.a, " C-A Radiation Storage Area"